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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/469,221	02/11/2004	Phillip Lograsso	20813P	3332

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EXAMINER
MONSHIPOURI, MARYAM

ART UNIT	PAPER NUMBER
1653	

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/469,221	LOGRASSO ET AL.	
	Examiner	Art Unit	
	Maryam Monshipouri	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,12,16,25,28,29,69 and 70* is/are pending in the application.

4a) Of the above claim(s) *2* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,12,16,25,28,29,69 and 70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *see attachment.*.

Applicant's response to restriction requirement filed 6/12/2006 is acknowledged. Applicant elected Group I(A), claims 1, 3-4, 6, 12, 16, 25, 28-29, 69-70 with traverse. Applicant's traversal arguments are confusing because they also reflect on Groups II and III. Applicant is reminded that response to applicant's arguments directed to Groups II and III were already addressed in the previous office action and will not be dealt with again.

In overcoming restriction held between Groups I (A)-(B) applicant is of the opinion that no savings of the PTO resources will be achieved by such restriction because the search of Group I(A) would include a search of Group I(B).

This argument was fully considered but was found **unpersuasive.** This is because as applicant is well aware many splice variants of a full-length polypeptide not only differ structurally from said polypeptide but do not even retain the same function. it is currently unclear whether the splice variant of MAPKAP-2 (or DNA encoding it) has even the same function as said MAPKAP-2 kinase (or DNA encoding it). Applicant has not provided any specific structural or functional characteristics of variants in the disclosure to clarify such questions.

Therefore, absent to the contrary, in view of the fact that most polypeptide splice variants are encoded by products which are structurally and are functionally different than a full-length polypeptide, the examiner maintains that lack of unity of invention is proper and for said reason in addition to reasons provided in the previous office action lack of unity is maintained and is hereby made **final.**

DETAILED ACTION

Claims 1, 3-4, 6, 12, 16, 25, 28-29, 69-70 are under examination on the merits.

Claims 2 is hereby withdrawn as drawn to non-elected invention. Claims 2, 5, 7-11, 13-15, 17-24, 26-27, 30-37, 39-68 are canceled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 38 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claim is indefinite because it depends from canceled claim 37.

Claims 1, 3-4, 12, 28-29, and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The tem "high stringency" in claim 1 and its dependent claims 3-4, 12, 28-29 and 70 is unclear. This term has not been defined in the disclosure. In page 30 only an example of "high stringency conditions" is provided. Applicant may overcome this rejection by recitation of exact salt and temperature conditions used for hybridization, based on the support provided in the disclosure.

Also, claim 1 part (b) is indefinite. It is not exactly clear how many products are recited in that part. Also, the function of the expression products are already recited in the preamble of Markush claim. Therefore it is confusing as to why that function is repeated again in part (b). In addition, if applicant in claim 1 part (b) is claiming any

complementary sequences he/she should be reminded that complementary DNA cannot encode a product with kinase function.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "modulates the activity" in the preamble of claim 16 and part (c) of claim 16 is confusing. Said phrase is usually referred to polypeptide and its active (catalytic) site. However, claim 16 is a method of modulating the expression of the DNA sequence encoding human MAPKAP-2 kinase. Since all the expressed mRNA may not necessarily turn into an active polypeptide due to post-transcriptional events etc., applicant is advised to reword said phrase to possibly " modulates the expression ...". Appropriate correction is required.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase " wherein the eukaryotic cells express a functional human parathyroid hormone 2 polypeptide (PTH2) " at the end of claim 16 is puzzling. There appears to be no relationship between MAPKAP-2 expression and what the eukaryotic host expresses. If MAPKAP-2 kinase is catalyzing the formation of said PTH2 polypeptide some additional step must be incorporated into claim 16 to connect the two polypeptides. Currently, the significance of the PTH2 expression ability of the eukaryotic host in the process claimed is unclear.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 16, 16 and 69 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 1 and 16, it should be noted that applicant is referring to genus of MAPKAP-2 kinase encoding fragments and a **genus** of second messenger activity (i.e. mRNA), respectively, which have been merely defined by function.

The court of Appeals for the Federal Circuit has recently held that such a general definition does not meet the requirements of 35 U.S.C. 112, first paragraph. " A written description of an invention involving chemical genus, like a description of a chemical species, requires a precise definition, such as be structure, formula {or} chemical name, of the claimed subject matter sufficient to distinguish it from other materials." *University of California v. Eli Lilly and Co.,* 1997 U.S. App. LEXIS 18221, at *23, quoting *Fiers v. Revel,* 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). The court held that " in claims involving chemical materials, generic formulae usually indicate with specificity what generic claims encompass. One skilled in the art can distinguish such a formula fro others and can identify many of the species that the claims encompass. accordingly, such a formula is normally an adequate description of the claimed genus. In claims to genetic material, however, a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA,' without more, is not an adequate written description of the

genus because it does not distinguish it from others. One skilled in the art therefore cannot, as one can do with a fully described genus visualize the identity of the members of the genus". Here, in both claims applicant is claiming a genera of products merely by what they encode rather than by what the are, rendering the claims subject to lack of adequate written description.

With respect to claims 25 and 69, it should be reminded that these claims are directed to a genus of DNA having the limitations of encoding a protein having 80% identity to SEQ ID NO:2 or having 80% identity to a DNA sequence encoding SEQ ID NO:2.

The disclosure does not contain any information about the function of all DNA sequences that are 80% identical to that encoding SEQ ID NO:2 or encoding a protein having 80% identity to SEQ ID NO:2. The genus of cDNAs that comprise these above cDNA molecules is a large variable genus with the potentiality of encoding many different proteins. Therefore, many functionally unrelated DNAs are encompassed within the scope of these claims, including partial DNA sequences. The disclosure provides only a **single species** of the claimed genus (namely SEQ ID NO:1) which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

Applicant is referred to the revised interim guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 25 and 69 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for isolated DNA sequences encoding SEQ ID NO:2, does not reasonably provide enablement for either DNA Sequences encoding products having 80% identity to SEQ ID NO:2 or DNA sequences having 80% identity to DNA sequences encoding SEQ ID NO:2 with no function.

The criteria for undue experimentation, summarized in *re Wands*, 8, USPQ2n 1400 (Fed. Cir. 1988) are: 1) the quantity of experimentation necessary, 2) the amount of direction or guidance presented, 3) the presence and absence of working examples, 4) the nature of the invention, 5) the state of prior art, 6) the relative skill of those in the art, 7) the predictability or unpredictability of the art, and 8) the breadth of the claims.

The disclosure fails to teach which residues in claimed DNA sequences of claims 25 and 69 must be retained such that their expression products retain kinase function. No example of such residues are provided either. Current state of the art indicates that once more than 5-6 bases of a DNA sequence encoding a full-length polypeptide is simultaneously mutated, substituted deleted etc. said mutated DNA sequence is not necessarily capable of encoding a product with a function associated with said full-length polypeptide.

Therefore, due to lack of sufficient guidance and examples provided in the disclosure and due to unpredictability of prior art as to which residues within the claimed

DNA sequences impart function to their expression products one of skill in the art has to go through the burden of undue experimentation in order to screen for those DNA sequences that encode products with MAPKAP- 2 kinase activity and as such the claims go beyond the scope of the disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 6, 12, 25, 28, 29, 69-70 are rejected under 35 U.S.C. 102(b) as being anticipated by Zu et al. (BBRC, 200(2), 1118-1124, 1994). Zu teaches a DNA sequence (see figure 1) that has 88.0% identity to SEQ ID NO:1, encoding a product having 100% identity to SEQ ID NO:2 of this invention (see the attached sequence alignment), anticipating claims 1, 3, 6, 25 and 69. In figures 2-3, HL-60 cells and E.coli host cells have been respectively transfected and transformed with the vector comprising the DNA sequences of Zu anticipating claims 28 and 12 respectively. In figure 3, a pGEX-2T vector is taught to comprise the DNA sequence of Zu anticipating claims 29 and 70.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zu (cited above) in view of current gene expression modulation techniques.

As explained above, Zu teaches a DNA sequence encoding a human MAPKAP-2 kinase wherein said DNA sequence encodes a product having 100% identity to SEQ ID NO:2. Zu does not teach a method of modulating the activity (see 112 second paragraph rejection above) of said kinase .

Current gene expression (transcription) modulation techniques teach that once a useful gene is identified it is routine to try to identify its activators and inhibitors using well known transcription modulators.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to start with the DNA of Zu and transfect a human eukaryotic cell such as hypothalamus neurons (which inherently expresse a functional human parathyroid hormone 2 polypeptide) with said DNA before modulating its expression in the presence of known transcription modulators, according to current gene expression modulation techniques.

One of ordinary skill in the art is motivated in identifying activators and inhibitors of MAPKAP-2 kinase encoding genes according to current gene expression modulation techniques because MAPKAP-2 kinase is known to be involved in inflammation and modulation of its activity (expression) may result in treating diseases such as arthritis in humans, rendering the invention obvious.

No claim is allowed.

Allowable Subject Matter

SEQ ID NO:1 is free of prior art. Further the prior art does not teach or suggest preparing such specifically claimed DNA sequence. Hence said sequence is also non-obvious.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maryam Monshipouri whose telephone number is (571) 272-0932. The examiner can normally be reached on 7:00 a.m to 4:30 p.m. except for alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Weber Jon P. can be reached on (571) 272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M Monshi

Maryam Monshipouri Ph.D.

Primary Examiner

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